

**BOOK REVIEW**

Gordon A. Swain

Ian Stewart. *Flatterland: Like Flatland, Only More So*. Perseus Publishing, Cambridge, MA, 2001.

In 1884, Edwin Abbott, a school teacher and Shakespearean scholar, wrote *Flatland* with a dual aim at social satire and mathematical exposition. Though Abbott was not a mathematician, his imagination in describing life in 2-dimensional space and how an additional dimension might be considered by those creatures, created a lasting and influential, though brief work. Since that time, various authors have attempted to write sequels (e.g., in *Sphereland* (Burger, 1965), the author explores curved spaces in a similar style.) or derivative works, the latest of which is the book under review. Ian Stewart has created a masterful tale in the flavor of *Flatland*, but reflecting the actual advances in mathematicians' understanding of geometry, topology, and physical space which have occurred in the last hundred or so years. Stewart is a mathematician, but is able to weave his understanding into a lively visual journey around and into spaces of all types – finite, curved, twisted, and fractal. The witty style brings to mind Douglas Adam's *Hitchhiker's Guide to the Galaxy* series, while paying homage to *Alice in Wonderland*. This book offers much to both the mathematician and the layman. The former will appreciate the inside jokes and plays on words, while seeing, perhaps for the first time, a coordinated presentation of the geometry and topology of classic spaces from a visual and intuitive viewpoint. The latter will make an acquaintance with imaginary worlds, discovering that they may actually live outside the mind of the mathematicians who play with them. By maintaining a mathematical honesty this book provides an antidote to the pseudomathematical gobbledygook that pervades the popular press.

The protagonists of the tale are Vikki (Victoria Line), great-granddaughter of Albert Square (whose adventures were memorialized in *Flatland*), and Space Hopper, the guide who wittily explains each new space in language she can understand. Vikki learns how to untie knots by using an extra dimension, how fractals can have non-integer dimension, meets a cow with only one side of beef (maned Moobius), and watches her left shoe become a right shoe and then back to a left as she takes laps around a projective plane. By looking at spaces both from the outside and the inside (quite a trick) they are able to truly distinguish their essential differences and inherent characteristics.

The style can be seen through a brief conversation between Hopper and Vikki after Hopper has caught a squarrel in Platterland (the hyperbolic plane).